

### The Largest World's Fair

**World Expo 2010.** Shanghai, China. To 31 October 2010.  
<http://en.expo2010.cn/>

The more than 200 pavilions at the current world's fair in Shanghai offer countless fun and science-related exhibits, unique multidimensional movies, and interesting activities. These range from ancient fossils (including 125-million-year-old flowers, early flying birds, and dinosaurs) to futuristic, cutting-edge sound, lighting, and sensor technologies that stir the imagination. Visitors can join interactive multimedia programs and enjoy spectacular views and outdoor performances. Exhibitors comprise 189 countries, 57 international organizations, and each of China's 31 provinces—municipalities—autonomous regions.

The Expo's theme, "Better City, Better Life," underscores the goal for environmental and socioeconomic sustainability in our rapidly urbanizing world. Reflecting the theme, the Expo displays numerous innovative ideas and emerging technologies that promote higher efficiency, lower CO<sub>2</sub> emissions, less waste, and the renewable use of energy and other resources. One example is the United Kingdom's visually awe-inspiring "Seed Cathedral," with 60,000 swaying fiber optic rods (filled with seeds, which will later be planted) that provide interior light during the day and become an enormous glowing piece of art at night. Another is on display in the Chinese national pavilion: the world's first "carbon negative" concept car, which would run on renewable energy and emit oxygen.

The first world's fair to be hosted by a developing country, Shanghai 2010 is expected to draw a record 70 million visitors. The most popular pavilions require reserved tickets and patient waits in dragonsque lines. Those unable to get away to Shanghai may enjoy virtual tours of the fair at <http://en.expo.cn>.

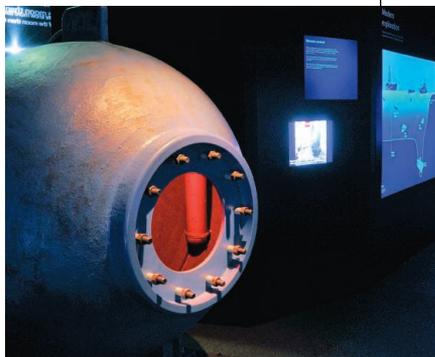
—Jianguo Liu and Shuxin Li (Michigan State University)

### Sink into the Depths of the Sea

**The Deep.** Natural History Museum, London, in collaboration with Natural History Museum, Basel, and the Senckenberg Research Institute and Nature Museum, Frankfurt am Main. To 5 September 2010.  
[www.nhm.ac.uk/thedeep/](http://www.nhm.ac.uk/thedeep/)

In the pitch-black water, 3 km down, under crushing pressure, food is problematic. So when a whale falls to its death, it's a bonanza for abyssal creatures. At the center of the exhibition *The Deep* is a partial skeleton of a sperm whale, used to illustrate what happens after a succession of scavenging hagfish and crustaceans have done their work. Next it's the turn of the snotworms (*Osedax*), recently discovered annelids that burrow into whale bones and, with the help of symbiotic bacteria, digest away the final traces of the behemoth. No wonder fossil whales are very rare.

In the gloom of the exhibition, projections of self-illuminating life forms swim around models of a giant squid and a sperm



whale hanging from the ceiling. There's a case of giant radiolarians, miraculously magnified in blown glass by Leopold and Rudolf Blaschka, who are famous for the exquisite collection of glass flowers commissioned by Harvard University's Museum of Natural History. Round the corner is a replica of William Beebe's bathysphere; if you put your head inside, you will hear the voices of the pilots describing the constellations of flashing lights they saw emitted from myriads of unexpected animals. And there are

indeed nightmare monsters, as the arrays of bizarre pickled fish attest to, with their huge eyes, glowing lures, and extensible jaws adapted to surmount the difficulties of snaring a morsel in the dark cold. Sailors imagined mermaids and krakens populated the deep; we know little better now, even of creatures as huge as giant squid. Despite the best efforts of ocean explorers, research in the deep is difficult and expensive; we learn that the crew of the *Challenger* voyage (1872–1876) complained mightily of the relentless tedium of trawling and hauling nets on their global survey. This exhibition supplies visitors with the chance to taste deep-ocean travel without any risk of dampness. You can step inside the submersible *Mariana*, take the captain's seat, and watch the endless snowfall of dying surface organisms drifting across a video porthole. Don't stop here though: Dip into *The Deep* to cool off for an hour, and then make your own voyage through the multitudes of extraordinary natural wonders and many spectacular exhibits the museum has to offer.

—Caroline Ash



### Once Upon a Time on an Ancient Reef

**Geikie Gorge National Park.** Western Australia. [www.dec.wa.gov.au/component?option=com\\_hotproperty/task/view/id,43/Itemid,1584/](http://www.dec.wa.gov.au/component?option=com_hotproperty/task/view/id,43/Itemid,1584/)

Scenic Geikie Gorge, in the rugged Kimberley region of Western Australia, offers visitors two journeys back in time. As the National Parks boat trip winds its way upstream, the towering cliffs of white and buff-gray limestone will whisk them back to the Devonian period, around 380 million years ago, when most of northwestern Australia was flanked by a reef system almost the scale of the living Great Barrier Reef. Geologists hail the gorge as one of the most spectacular exposures of rocks this age anywhere. Myriad bizarre life forms once flourished on, in, and around this fossil reef. It was built up not by coral but by algal communities called stromatolites aided by layered, sponge-like stromatoporoids.

The Devonian reef exposed along the Fitzroy River runs for 325 km across the Kimberley landscape, in remote places graced by the giant bottle trees (boabs). Just south of Fitzroy Crossing (the town closest to the gorge), jagged outcrops of the reef are expressed as sharp, linear mountain ranges, albeit low ones. Here some of the world's best fossil fishes can be found as three-dimensional, uncrushed skeletons entombed in limestone concretions that litter the valley floors for 80 or so km. In his 1979 series *Life on Earth*, David Attenborough traveled here (to a cattle ranch called Gogo) to teach us about fish evolution. Expeditions I have led to the site over the past 25 years have been fortunate to stumble on some interesting discoveries: an armored placoderm fish (a long-extinct group) that held an unborn embryo inside her, still linked by a mineralized umbilical cord; a fish specimen with